

AMIETE – ET/CS/IT (Current Scheme)

Time: 3 Hours

DECEMBER 2015

Max. Marks: 100

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

NOTE: There are 9 Questions in all.

- Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.
- The answer sheet for the Q.1 will be collected by the invigilator after 45 minutes of the commencement of the examination.
- Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.
- Any required data not explicitly given, may be suitably assumed and stated

Q.1 Choose the correct or the best alternative in the following: (2×10)

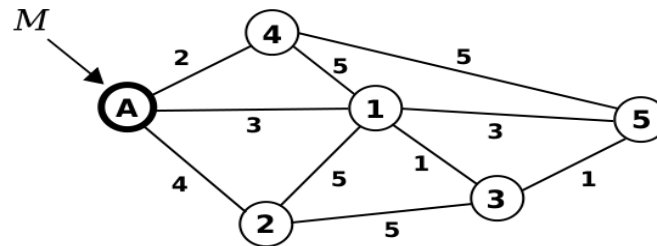
- a. Which of the following is an application layer service?
(A) File transfer and access (B) Mail service
(C) Remote log-in (D) All of these
- b. If the period of a signal is 10000 ms, what is its frequency in kilohertz?
(A) 10^{-2} kHz (B) 10^{-3} kHz
(C) 10^{-4} kHz (D) 10^{-1} kHz
- c. In modulo-2 arithmetic, we use the _____ operation for both addition and subtraction.
(A) OR (B) XOR
(C) AND (D) None of these
- d. Which of the following primarily uses guided media?
(A) Radio broadcasting (B) Satellite communications
(C) local telephone system (D) cellular telephone system
- e. The maximum throughput for pure ALOHA is what percent?
(A) 36.8 (B) 18.4
(C) 12.2 (D) None of these
- f. A three-layer switch is a kind of
(A) bridge (B) router
(C) repeater (D) None of these
- g. An organization is granted a block; one address is 2.2.2.64/20.
The organization needs 10 subnets. What is the subnet prefix length?
(A) /20 (B) /24
(C) /25 (D) None of these

- h. DNS can use the services of _____ using the well-known port 53.
 (A) UDP (B) TCP
 (C) Either (A) or (B) (D) None of these
- i. In TCP, one end can stop sending data while still receiving data. This is called
 (A) half-close (B) half-open
 (C) one-way termination (D) none of these
- j. The SMTP standard adopts.
 (A) RFC 822 (B) RFC 532
 (C) RFC 823 (D) RFC 824

**Answer any FIVE Questions out of EIGHT Questions.
 Each question carries 16 marks.**

- Q.2** a. What are the responsibilities of the network and transport layers in TCP/IP model? (8)
- b. What are the key elements of the internet, explain with simple network diagram? (5)
- c. Explain half-duplex and full-duplex mode of communication between two devices. (3)
- Q.3** a. Explain the following line coding schemes with a graph- (8)
 (i) Polar NRZ
 (ii) Differential Manchester encoding
 (iii) Bipolar-AMI
- b. Explain the process of Delta Modulation (DM) technique. (8)
- Q.4** a. Explain how error-detecting code CRC works. (8)
- b. Explain physical description, applications and transmission characteristics of the least expensive and most widely used guided transmission medium (8)
- Q.5** a. Which layers of TCP/IP model uses sliding window protocol? (2)
- b. Explain Go-Back-N ARQ through suitable diagram. (6)
- c. What are differences between Go-Back-N ARQ and Stop-and-Wait ARQ? (4)
- d. Draw the structure of the HDLC frame explain its trailer part fields. (4)
- Q.6** a. Compare the Circuit Switching and Packet Switching with event timing diagram. (8)

- b. Explain Dijkstra's Algorithm for least cost. Find the least costs from node A, for the following graph. (8)



- Q.7** a. Write a short note on Bridges. Explain how two LANs are connected by using bridges (8)
- b. Draw the 802.3 frame format. Write down the specifications of 100 Mbps Fast Ethernet specified under 100 Base-X and 100 Base-14. What are the Band rates in different versions/parts of Ethernet? (4)
- c. What is CSMA/CD? (4)
- Q.8** a. Which version of IP is currently in use? (1)
- b. Explain about next generation IP protocol version IPv6. Draw its header diagram. (8)
- c. Explain the following: (7)
- (i) Routing
 - (ii) Datagram
 - (iii) Subnetting
- Q.9** a. Which transport-level protocol provides connection-less communication? Draw its header and explain how it works? (8)
- b. List out any four of the domain names which are related to money and finance (2)
- c. Explain the protocol SMTP. (6)